PROC. ENTOMOL. SOC. WASH.
102(4), 2000, pp. 919–923

A NEW SPECIES OF *CHLORONIA* BANKS (MEGALOPTERA: CORYDALIDAE) FROM SOUTHEASTERN BRAZIL, WITH A KEY TO THE SPECIES OF BRAZIL

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Abstract.—The Neotropical dobsonfly genus *Chloronia* (Megaloptera: Corydalidae: Corydalinae) contains 14 previously described species. In this paper, ***Chloronia pennyi,*** a new species from Minas Gerais, Brazil, is described and illustrated. In general appearance *C. pennyi* resembles most the Andean *C. bogotana* Weele, especially in the small fuscous markings on the head and the pair of fuscous bands on the pronotum. In the new species, the antennae are entirely yellow (apically infuscate in *C. bogotana*), the wings are mostly pale (patterned in *C. bogotana*), and the dark bands on the pronotum are continuous (nearly meeting in middle in *C. bogotana*). A key for adult males of the four currently recognized Brazilian species is included. New distribution records are given for *C. corripiens* (Walker) in southeastern Brazil.

Key Words: *Chloronia,* new species, Megaloptera, Brazil, Neotropics, Corydalidae, dobsonfly, taxonomy, key

The Neotropical genus *Chloronia* is distributed from northwestern and northeastern Mexico, southward into western and southeastern South America, including some of the Lesser Antilles. Individuals of this genus are rather small dobsonflies (forewing length 24–50 mm) with a characteristic color (yellow with black spots), which allows for easy recognition. After the revision by Penny and Flint (1982), Flint (1991) clarified the identity of *Chloronia bogotana* Weele and added two new species from Costa Rica (Flint 1992), and Contreras-Ramos (1995) described two new species each from Ecuador and Guatemala. In all, 15 species of *Chloronia,* including the one described in this paper, are currently recognized. Larvae of *Chloronia* have been diagnosed by Penny and Flint (1982) and Contreras-Ramos and Harris (1998). Accounts on habitat of a few species have been given by Penny and Flint (1982), Geijskes (1984), and Contreras-Ramos (1999).

In this paper, a new species of *Chloronia* from southeastern Brazil is described and illustrated. In 1998, five specimens of the new species were collected in two localities in Minas Gerais during caddisfly survey work by Ralph W. Holzenthal (UMSP) and colleagues. General similarity of the distinct Brazilian series with the distantly distributed *C. bogotana* (Andes of Bolivia, Colombia, Ecuador, and Peru). indicated high possibilities for the Brazilian specimens to belong in a new species. This was corroborated after careful examination of the male genitalia of the Brazilian series. Additional distributional records for *C. corripiens* (Walker) in southeastern Brazil, and a key for the identification of the four *Chloronia*

Fig. 1. Habitus of *Chloronia pennyi,* holotype.

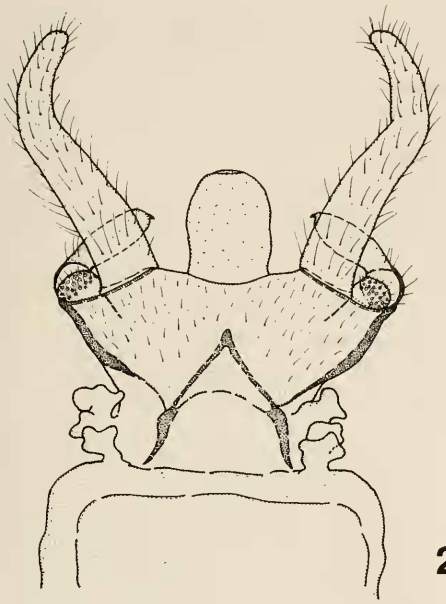
species currently recorded in Brazil also are presented in this paper.

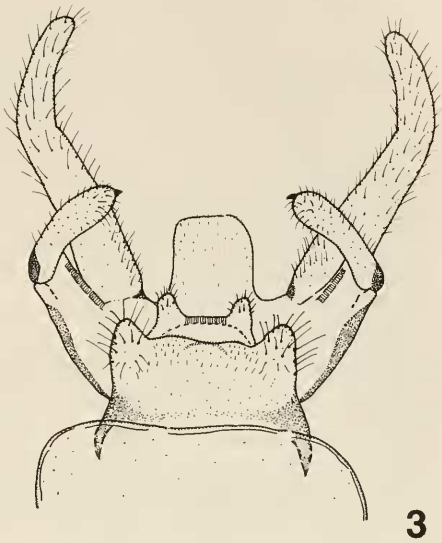
The genitalic and venational terminology used here follows that of Glorioso (1981), as modified by Contreras-Ramos (1998). Specimens were originally preserved in 80% ethanol. Three males were spread and pinned for dry preservation. Genitalia were dissected, cleared, and stored by standard methods, as explained by Contreras-Ramos (1998). Specimens will be deposited at the entomological collections of the Museu de Zoologia, Universidad de São Paulo, Brazil (MZSP); Department of Entomology, University of Minnesota, St. Paul (UMSP); and the National Museum of Natural History, Smithsonian Institution, Washington, DC (NMNH).

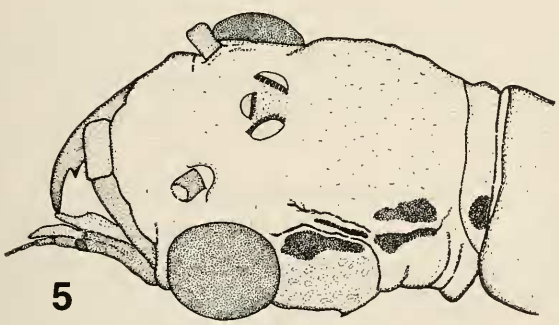
Chloronia pennyi Contreras-Ramos, new species

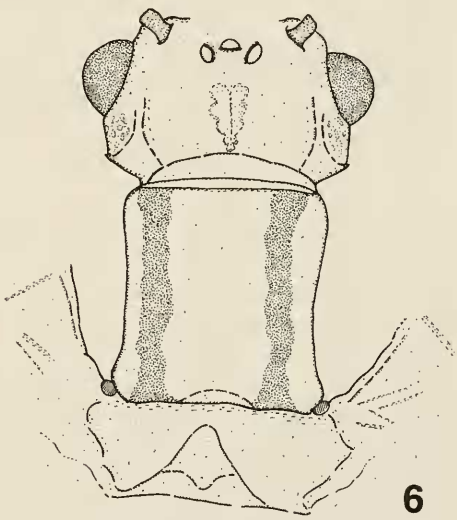
(Figs. 1–6)

Diagnosis.—This species, together with *Chloronia corripiens* (Walker) and *C. plaumanni* Penny and Flint, appears to have a phylogenetically basal position in the genus. All three have an unmodified ninth sternite, a sparsely setose ninth tergum (lacking small clusters of spinous setae present in most species), as well as conspicuous dorsolateral pregenital sacs between the eighth and ninth abdominal segments. However, on the basis of general appearance, the new species is most similar to *C. bogotana.* Both have small posterolateral spots on the head (Flint 1991, figs. 5, 6) and elongate dark spots on the pronotum. In *C. bogotana,* nevertheless, the pronotal spots are discontinuous, not meeting in the middle (Flint 1991, figs. 5, 8), whereas in the new species they form a pair of continuous lateral bands (Fig. 6). Forewing coloration in *C. bogotana* is patterned, with most crossveins dark (Flint 1991, figs. 7–9). In the new species, forewings are mostly clear with few crossveins slightly dark (Fig. 1). With respect to genitalic characters, the 10th sternite of *C. pennyi* resembles that of *C. convergens* Contreras-Ramos. In both, 10th sternite lobes are sclerotized and su-









Figs. 2–6. *Chloronia pennyi*. 2, Male genitalia, dorsal. 3, Same, ventral. 4, 10th sternite. 5, Head, dorsolateral. 6, Pronotum, dorsal.

bquadrate, but in the new species lobes lack apical spines and the 10th sternite has only slightly developed anterolateral projections (Fig. 4).

Description of adult (Figs. 1, 5–6).—Head width, ♂ 3.6–4.1 mm (average 3.8 mm, n = 3), ♀ 4.1–4.3 mm (average 4.2 mm, n = 2); forewing length, ♂ 27.4–29.4 mm (average 28.3 mm, n = 3), ♀ 34.3–34.7 mm (average 34.5 mm, n = 2). Color generally pale yellow with fuscous spots and bands. Head pale yellow, mandible yellowish brown with teeth and outer side dark reddish-brown. Labrum subquadrate with pair of long, flattened setae. Clypeal margin nearly straight. Compound eyes and base of ocelli dark. Postocular spine blunt, colored as head. Pattern of fuscous wide-elongate

spot at postocular plane, thin spot at adjacent ridge, pair of posterior spots, and round spot at occiput, on each side of head (Fig. 5). Antenna 37 to 44-segmented, filiform, yellow, with at most last segment infuscate. Maxilla yellow with 5-segmented palp, last two segments pale brown. Labial palp 4-segmented, yellow.

Pronotum yellow, with pair of dark, continuous, longitudinal bands (Fig. 6). Mesonotum without fuscous spots. Legs yellow, tarsal claws brown. Forewing pale yellow, hyaline, with 26–27 costal crossveins, 0–2 forked, a few in proximal ⅓ of wing with dark ends. Veins mostly yellow, R_1-Rs crossveins, forking of M, and few basal crossveins finely fuscous. Posterior margin of wing with subtle grayish maculations. Anterior 2A cell variably with a spot to only a slight maculation. Hindwing pale yellow, hyaline, but 2nd *r* brown.

Male genitalia (Figs. 2–4): Ninth tergum subtriangular, finely and sparsely setose, without patches of spinous setae; V-shaped internal inflection reaching midlength of tergum. Tenth tergites about 2.5 times as long as ninth tergum, subcylindrical, bluntly tapering, basal ⅔ divergent, apical ⅓ directed posteriorly, finely and evenly setose (Fig. 2). Ninth gonostylus incurved, fusiform, anteroventral margin slightly more convex, with sharp apical point. Ninth sternum moderately sclerotized, subquadrate, with well developed posterolateral lobes, slightly convex posteromesally (Fig. 3). Membrane between 9th and 10th sternites eversible, broadly bilobate, thickened. Tenth sternite convex, with small, sharply pointed anterolateral projections; lobes sclerotized, papilliform, subequal in width and length, sparsely and conspicuously setose (Fig. 4).

Material examined.—*Holotype* ♂: BRAZIL. Minas Gerais: Serra do Cipó, Rio Cipó in Cardeal Mota (Cach. Baixo), 19°20.553′S, 43°38.531′W, el. 750 m, 10–15.ii.1998, Holzenthal, Paprocki, Huisman [head width = 3.6 mm, forewing length = 28.0 mm] (MZSP).

Paratypes: Same data as holotype, 1 ♀ (MZSP), 1 ♂, 1 ♀ (UMSP); Minas Gerais: confluence Rio Peixe & Rio Preto do Itambé, 19°17.525′S, 43°15.457′W, el. 500 m, 4.ii.1998, Holzenthal & Paprocki, 1 ♂ (NMNH).

Etymology.—This new species is gladly dedicated to Norman D. Penny from the California Academy of Sciences, in recognition of his extensive contributions to Neotropical neuropterology, as well as acknowledging his support for the author's graduate research projects.

Key to Known Brazilian Species of *Chloronia* (Modified from Penny and Flint 1982)

1. Head with pair or few small fuscous spots posteriorly 3
– Head unicolorous or only with lateral margin infuscate 2
2. Lateral margin of head fuscous (Penny and Flint 1982, fig. 44) . . . . . *C. plaumanni* Penny and Flint
– Lateral margin unmarked (Penny and Flint 1982, fig. 42) . . . . . *C. corripiens* (Walker)
3. Pronotum with two anterior and two posterior fuscous spots, wings patterned (Penny and Flint 1982, fig. 48) . . *C. hieroglyphica* (Rambur)
– Pronotum with two fuscous, longitudinal bands (Fig. 6), wings mostly clear (Fig. 1) . . . . . *C. pennyi*, new species

Additional Material Examined

Chloronia corripiens (Walker).—BRAZIL. Minas Gerais: Serra do Cipó, Cardeal Mota, Cachoeira Veu da Noiva, 19°18.912′S, 43°36.260′W, el. 800 m, 12.ii.1998, Holzenthal & Paprocki, 1 ♂ (UMSP); Paraná: Rio Mãe Catira, 10 km N Porto de Cima, 25°21.821′S, 48°52.473′W, el. 200 m, 8–9.xii.1997, Holzenthal & Huisman, 3 ♀ (UMSP).

Acknowledgments

Thanks to Ralph W. Holzenthal (UMSP) for calling my attention to a series of dobsonfly specimens collected through his caddisfly survey work in Brazil, among which the new *Chloronia* species was found. Thanks also to Philip J. Clausen for curat-

ing dobsonflies (UMSP) and processing a loan to me. A brief research visit to the University of Minnesota was funded by the Instituto de Biología of the Universidad Nacional Autónoma de México. The hospitality of Fernando Muñoz-Quesada (UMSP) and family is greatly appreciated. Finally, thanks to David E. Bowles (Texas Parks and Wildlife Department) and an anonymous reviewer for improving the quality of the manuscript.

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